AP10901

Claims

1-16 Canceled

17. (New) A parking assistance device for a vehicle comprising:

a parking assistance unit that permits autonomous parking or steering of the vehicle on a path for parking or assists a driver of the vehicle in a parking operation on the path for parking the vehicle by applying a steering torque to a steering wheel, wherein the driver is guided by at least one artificial steering stop on the path for parking the vehicle, and a measurement of a parking space is performed by a lateral distance measurement and a determination of position from signals from wheel rpm sensors and a steering angle sensor.

18. (New) A method for measuring a parking space comprising:

measuring a lateral distance of the parking space; and

determining a position based on a steering angle and a change in path information, wherein the change in path information is determined based on signals from wheel rpm sensors.

19. (New) A method according to claim 18 further comprising:

approximately detecting corners of objects or vehicles bordering the parking space;

determining valid ranges for fronts of the objects or vehicles bordering the parking space;

determining the fronts of the objects or vehicles bordering the parking space; and

calculating the corners of the objects or vehicles bordering the parking space from the valid ranges.

20. (New) A method according to claim 18, wherein the signals of the wheel rpm sensors are interrupt signals of the rear wheel rpm sensors of the wheels on the rear axle, and depending on these signals, a change in path of the rear axle midpoint is determined.

21. (New) A method according to claim 20, wherein a Cartesian coordinate system is defined as a "global" Cartesian coordinate system in an initialization phase for a parking procedure.

22. (New) A method according to claim 18, wherein a change in path of the rear axle midpoint of the vehicle and a steering angle measured by the steering angle sensor are calculated for a continuous determination of position and yaw angle in relation to a coordinate system sent at the start.

23. (New) A method according to claim 18 further comprising determining a current vehicle position by:

determining a distance Δs by which the vehicle has moved since a last scanning step on the basis of the wheel rpm sensor signals and a scaling factor;

calculating a yaw angle of the vehicle on the basis of the distance Δs determined, the steering angle sensor signals and a wheel base of the vehicle;

determining a particular current yaw angle by a recursive equation

$$\Psi_{ist}(k+1) = \Psi_{ist}(k) + \frac{\Delta s}{l} * sin(\delta_{ist})$$

and;

determining a current actual x position and actual y position of a rear axle midpoint

from the current yaw angle and the current steering angle.

24. (New) A method according to claim 18, wherein on the basis of a continuously determined position and a continuously determined yaw angle in relation to a coordinate system set at the start and a distance d from the lateral distance measurement, an x-y position of the object surfaces bordering the parking space is calculated in relation to a global coordinate system.

25. (New) A method according to claim 18, wherein the detection of the parking space or the object surfaces bordering the parking space is performed independently of stored values or interim values on the basis of a change in a distance d from the lateral distance measurement.

26. (New) A method according to claim 18, wherein at least one of measured values or sensor signals of the lateral distance measurement or position determination is at least partially filtered.

27. (New) A method according to claim 18, wherein a Cartesian coordinate system for a parking operation is defined and a tolerance range for the x coordinate, in which a corner of the objects or vehicles bordering the parking space could be situated, is preselected or determined as a function of jumps in the distance value d at the beginning of the parking space and at the end of the parking space.

28. (New) A method according to claim 18, wherein fronts of the vehicles bordering the parking space (vehicle fronts in front of and behind the parking space) are determined from the measured values that are outside of the tolerance range and the vehicle fronts of the vehicles in front and behind are described in simplified terms by a linear equation.

29. (New) A method according to claim 28, wherein an exact x position of the corner is determined from the deviations and the measured values from the straight lines thus determined.

30. (New) A method according to claim 18, wherein fronts of the vehicles bordering the parking space (vehicle fronts in front of and behind the parking space) are determined and a shape of the border of the path is deduced from the determined vehicle fronts.

31. (New) A method according to claim 18 further comprising:

waiting for a first parking space corner;

passing the first parking space corner;

defining a tolerance range for the first parking space corner;

defining a range for a first vehicle front;

calculating a linear equation for the first vehicle front;

waiting for a second parking space corner;

calculating the first corner;

passing the second corner;

defining a tolerance range for the second parking space corner;

waiting on a valid starting range for a parking maneuver;

defining the valid range for a second vehicle front;

continuously calculating a linear equation for the second vehicle front;

continuously calculating the second corner; and

calculating a forward trajectory.